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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

FAN, CHIEH M

ART UNIT	PAPER NUMBER
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2634

DATE MAILED: 07/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/054,327

Applicant(s)

YOUNG ET AL.

Examiner

Chieh M Fan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 April 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-21,27,28,30,31,37-41 and 61-95 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 83-93 is/are allowed.
- 6) ☒ Claim(s) 17-21,27,30,31,66-69,71-82,94 and 95 is/are rejected.
- 7) ☒ Claim(s) 28,37-41,61-65 and 70 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

This Office Action is in response to the latest amendment filed on 4/19/04.

Claim Objections

1. Claims 17-21, 37-41 and 61-70 are objected to because of the following informalities:

Regarding claims 17-21 and 67-70,

- a. "during a second time" in line 12 of claim 17 should be changed to ---
during a second time period ---;
- b. "bit block periods" in line 13 of claim 17 should be changed to --- bit clock
periods ---;
- c. "rime period" in lines 1 and 2 of claim 67 should be changed to --- time
period ---;
- d. "rime period" in lines 1 and 2 of claim 68 should be changed to --- time
period ---;

Regarding claims 37-41,

- a. it is suggested changing "said analog codec sections" in line 5 from the
bottom of claim 37 to --- said analog codec ---; and
- b. it is suggested changing "one or more of said xDSL data frames" in line 4
from the bottom of claim 37 to --- one or more of the xDSL data frames ---.

Regarding claims 61-66,

a. "performing AID and DIA operations" in line 12 of claim 61 should be changed to --- performing A/D and D/A operations ---.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 66, 81, 94 and 95 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 66 recites the limitation "said ATM cells" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

Regarding claim 81, it is not clear how a digital controller can be incorporated with both North Bridge and South Bridge chipsets as claimed.

Regarding claims 94, it is not clear the limitation "the analog CODEC" in line 2 is referred to which one of the plurality of analog CODECs recited in 9 of claim 90.

Regarding claims 95, it is not clear the limitation "analog CODEC" in line 2 is referred to which one of the plurality of analog CODECs recited in 9 of claim 90.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 17, 67, 69, 71-73, 78 and 82 are rejected under 35 U.S.C. 102(e) as being anticipated by Timm et al. (U.S. Patent No. 6,055,268, "Timm" hereinafter).

Regarding claim 17, Timm teaches a method for transmitting data on an xDSL digital communications link (col. 5, lines 48-49) between a digital controller (150 in Fig. 1b) and an analog codec (170, 172 in Fig. 1b) located within a personal computer system, the method comprising the steps of:

(a) generating a bit clock (SAMPLE CLOCK in Fig. 1b) adapted for data transmission requirements of the xDSL digital communications link; and

(b) communicating the data and operational and/or control information, embedded in a plurality of words (col. 9, lines 46-47), between the digital controller and analog codec at a rate corresponding to said bit clock wherein each of the plurality of words includes a portion of the data and a portion of the operational and/or control information, and wherein said operational and/or control information embedded in each of said plurality of words is transmitted over a data line during a first time period

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corresponding to a first number of bit clock periods, and the data embedded in each of said plurality of words is transmitted over said data line during a second time period corresponding to a second number of bit clock periods (196, 198, 199 in Fig. 1d; 187 in Fig. 1e; 36 in Fig. 4a; that is, the data and the control information are time-multiplexed).

Regarding claim 67, as explained above, Timm teaches time-multiplexing the data and control information. The claimed limitation is clearly met.

Regarding claim 69, since the control information is at least one bit (otherwise there will be no control information), the claimed limitation is inherent.

Regarding claim 71, Timm teaches a method of transmitting data over a digital subscriber loop (DSL) based communications link between a DSL digital circuit section (150 in Fig. 1b) and an a DSL analog circuit section (170, 172 in Fig. 1b) comprising the steps of:

(a) generating a DSL bit clock signal (see SAMPLE CLOCK in Fig. 1b) adapted for data transmission requirements of the DSL based communications link; and

(b) transmitting DSL data over a data line between the DSL digital circuit section and the DSL analog circuit section based on said DSL bit clock signal (see BUFFER to DAC 170 in Fig. 1b; also see "INPUT DATA BIT STREAM" entering 36 in Fig. 4a); and

(c) transmitting DSL operational and/or control information over said data line based on said DSL bit clock signal (see BUFFER to DAC 170 in Fig. 1b; also see "CONTROL CHANNEL, OPERATIONS CHANNEL" entering 36 in Fig. 4a); and

wherein said data line is time division multiplexed (col. 9, lines 46-47) in so that either a single bit of said DSL data or a single bit of said DSL operational and/or control

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information is transferred between the DSL digital circuit section and the DSL analog circuit section over said data line during a single bit clock signal period.

Regarding claim 72, Timm also teaches generating a separate DSL word clock signal (SYMBOL CLOCK in Fig. 1b) based on the DSL bit clock signal (SAMPLE CLOCK in Fig. 1b).

Regarding claim 73, the DSL data of Timm is digital since the DSL data is input to the DAC 170 in Fig. 1b.

Regarding claim 78, it is inherent a control signal has a predetermined length.

Regarding claim 82, Timm teaches embedded operations channels (198 in Fig. 1d).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 68 is rejected under 35 U.S.C. 103(a) as being unpatentable over Timm et al. (U.S. Patent No. 6,055,268, "Timm" hereinafter).

Timm teaches the claimed invention (see the rationale applied to claim 17 above) including a symbol clock, but does not specifically teaches the period of the symbol

clock is at least 4 bit clock periods. However, the number of bits in a symbol is clear a matter of design options, dictated by system requirement and user's need.

8. Claims 18-21, 74-77 and 79 are rejected under 35 U.S.C. 103(a) as being unpatentable over Timm et al. (U.S. Patent No. 6,055,268, "Timm" hereinafter) in view of Bae et al. (U.S. Patent No. 5,832,387).

Regarding claim 18, 19 and 74-77, Timm teaches the claimed subject matter (see the rationale applied to claims 17 and 71 above), but does not particularly point out the control and/or operation information is related to system setting or power management of an xDSL modem. However, the use of a control signal for system setting or for controlling transmission power is well known and widely used in the art so as to provide the user more flexibility to change the system constraints as desired or required without physically approaching to the system. The content of the control signal is a matter of design choice, dictated by the system requirements. For example, Bae teaches adaptively controlling transmission using a control signal in a DSL system (col. 3, lines 29-42). Based on the reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the control and/or operational information of Timm to control the system setting or the power to a desired value.

Regarding claim 20, the network architecture of Timm enables Asynchronous Transfer Mode (ATM) connection (col. 12, lines 23-24).

Regarding claim 21, it is known in the art that asynchronous transmission is a method of data transmission which allows characters to be sent at irregular intervals by preceding each character with a start bit, and following it with a stop bit (official notice is

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taken here). Since Timm teaches asynchronous transmission, Timm inherently/implicitly teaches using a start bit.

Regarding claim 79, the length of control information is just a matter of design choice, depending on the content of the control information required by the system.

9. Claims 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bingham et al. (US Patent 5,680,394, "Bingham" hereinafter).

Bingham discloses a method for the transmission of xDSL data (see col. 1, line 6-col. 2, line 26) between a central unit and a plurality of remote units (see Fig. 1b), i.e. communication circuits. The central unit includes a master oscillator (master clock) that feed a sample clock and a symbol clock (see col. 7, lines 25-47, Fig. 6, also see claim 23). Each remote unit may be grant access in successive time period; that is known as Time Division Multiple Access (TDMA) (see col. 8, lines 8-10). Furthermore, a plurality of transmitting line and receiving lines are provided for communication (see 206a-206e in Fig. 1b). Bingham et al. further teach that the information for the media access control may be included as the overhead in the downstream signal (col. 8, lines 18-23).

The difference between Bingham and the instant invention lies in that the communication link is located within a PC. However, the location of the communications link would not affect operation of the method. The recitation of a PC is only directed to the intended use (location) of the communications link, but would not change any step of the claimed method. Therefore, it would have been obvious to one

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of ordinary skill in the art at the time the invention was made to use the method of Bingham et al. in a PC.

10. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bingham et al. (US Patent 5,680,394, "Bingham" hereinafter) in view of Leo et al. (U.S. Patent No. 4,999,834).

Bingham teaches the claimed invention (see the rationale applied to claim 27 above), but does not teach transmitting the operational and/or control information asynchronously with respect to data words. Leo et al. teaches that asynchronous communication has the advantage of requiring a low amount of overhead to implement (col. 1, lines 41-42). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to transmit the operational and/or control information asynchronously with respect to data words in the system of Bingham so as to reduce the amount of overhead.

11. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bingham et al. (US Patent 5,680,394) in view of the admitted prior art.

Bingham et al. teaches the claimed invention, see the rationale applied to claim 27 above, but fails to teach the digital controller is placed on a computer motherboard.

The admitted prior art described in the background section and in Fig. 1 teaches separating the analog and digital portions of a high-speed modem. The digital controller is placed on the motherboard and the analog codec is placed on a card that is

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physically separated from the motherboard. Such arrangement would keep the analog codec free from the electronic noise from the electronic components on the motherboard. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to place the digital controller on the motherboard and place the analog codec on a card that is physically separated from the motherboard, so as to keep the analog codec free from the electronic noise from the electronic components on the motherboard.

12. Claim 80 is rejected under 35 U.S.C. 103(a) as being unpatentable over Timm et al. (U.S. Patent No. 6,055,268, "Timm" hereinafter) in view of the admitted prior art.

Timm teaches the claimed invention, see the rationale applied to claim 71 above, but fails to teach the digital controller is placed on a computer motherboard and the analog codec is located on a card that is physically separated from the motherboard. That is, Timm does not teach transfer the control information over a bus located on a motherboard.

The admitted prior art described in the background section and in Fig. 1 teaches separating the analog and digital portions of a high-speed modem. The digital controller is placed on the motherboard and the analog codec is placed on a card that is physically separated from the motherboard. Such arrangement would keep the analog codec free from the electronic noise from the electronic components on the motherboard. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to place the digital controller on the motherboard and

place the analog codec on a card that is physically separated from the motherboard, so as to keep the analog codec free from the electronic noise from the electronic components on the motherboard.

Allowable Subject Matter

13. Claims 37-41, and 61-65 would be allowed if rewritten to overcome the objections stated in the claims objections section above.

Claim 66 would be allowable if rewritten to overcome the claim objections and rejections under 35 USC 112, second paragraph above.

Claims 28 and 70 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and overcome the claim objections stated above.

Claims 83-93 are allowed.

Claims 94-95 would be allowable if rewritten to overcome the claim rejections under 35 USC 112, second paragraph above.

Response to Arguments

14. Applicant's arguments filed 4/19/04 with respect to claim 27 have been fully considered but they are not persuasive.

The applicants argue that Bingham fails to teach "operational and/or control information for each of said plurality of separate communication circuits is embedded in data words communicated through each of their respective communications channels"

Examiner's response --- As indicated in this and previous Office Actions, Bingham teaches that the information for the media access control may be included as the overhead in the downstream signal (col. 8, lines 18-23).

The applicants also argue about the examiner's broad interpretation of central units and remote units to be the claimed digital controller and analog codec.

Examiner's response --- The examiner noticed that the analog codec is not recited in claim 27. The claim merely recites the communication between a digital controller and a plurality communication circuits. Since the central unit inherently comprises a digital controller and the remote units are communication circuits, the claimed limitations are met.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chieh M Fan whose telephone number is (703) 305-0198. The examiner can normally be reached on Monday-Friday 8:00AM-5:30PM, Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (703) 305-4714. The fax phone numbers

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for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.



Chieh M Fan
Primary Examiner
Art Unit 2634

cmf
July 1, 2004